Devon Mammal Group

November 2021 Newsletter

www.devonmammalgroup.org *Registered charity No. 1110056*

Contents

We are always looking for new and enthusiastic committee members! If you would like to join us contact

DMG Secretary

Charly Mead

charlymead91@gmail.com

Chair's Chat

Whilst several of our local native species (and possibly members) are thinking about hibernating, the Harvest Mouse Project got off to a flying start with many records of nests being reported already. Sarah, our amazing Harvest Mouse Project Officer, has been holding training events at a number of locations including some of the South West Lakes Trust sites, with super results. Her new educational Harvest Mice, 'Pop' and 'Corn' are proving to be very popular with the trainees and are adapting very well to their newfound fame. They even made a guest appearance at the recent National Bat Conference, much to the delight of the attendees and hosts.

We will be presenting an online talk titled: 'Bringing Pine Martens back to the West Country – benefits and challenges' so keep an eye out for booking instructions nearer the time. The Devon Mammal Group Committee have been busy organising talks for the winter and spring. In December we will be welcoming Elinor Parry of Devon Wildlife Trust who will be presenting the Devon Bat Survey 2021 Results online, the Eventbrite link for booking this talk was sent out by email on the 7th November. In January 2022 Ed Parr Ferris of Devon Wildlife Trust will be also be giving us a talk on Pine Martens.

I would like to extend my personal thanks to our wonderful committee for their unwavering dedication and hard work again this year. The diverse range of online talks and face to face events which we have been able to offer in 2021, is a testament to their commitment to ensuring that the pandemic has not adversely impacted the quality of services we provide.

Finally, the committee and I would like to take the opportunity thank all our members for their continued support, and wish you all good health for a **Merry Christmas** and a very **Happy New Year!**

Helen Calver - DMG Chair

Talks and Ongoing Projects

The Effects of Roads and Railways on Bats

Professor Fiona Mathews - University of Sussex

Tuesday 23rd November at 7.30pm via Zoom

Please book your space through Eventbrite

https://www.eventbrite.co.uk/e/the-effects-of-roads-and-railways-on-bats-by-professor-fiona-mathews-tickets-210601513797

Photo: Mike Symes

Devon Bat Survey 2021 Results

Elinor Parry (Devon Wildlife Trust)

Devon Bat Survey is a citizen science project that has been running through Devon Wildlife Trust since 2016. The aim is to give anyone the opportunity to find out what bats are about near them, by borrowing a bat detector which will record the ultrasonic calls the bats make and are used to identify them to species. The project was funded through Devon Greater Horseshoe Bat Project which came to an end earlier this year, and has now been taken on by Devon Biodiversity Records Centre (supported by Saving Devon's Treescapes and the Halpin Trust). Find out how bats have been doing in Exeter, Seaton, Torbay and South Devon.

Monday, 13th December 2021 at 7:30pm

Online via Zoom

Members: £2.50 Non Members: £4.00

https://www.eventbrite.co.uk/e/devon-bat-survey-2021-results-by-elinor-parry-tickets-202085863257

Beaver Information Day (Tamar)

Saturday 22nd January 2022

The Tamar Beaver Management Group is looking to build up a pool of local people able to help with Beaver surveys and management over the next few years. In the first instance, the Devon Wildlife Trust will hold an Information day in January 2022 based at the DWT Offices in **Cookworthy Forest (EX21 5UX**), and then a visit to a nearby Beaver site.

Due to the current Covid situation, we plan to hold the morning presentations, followed by our packed lunches, in a large airy barn, before driving 10 minutes to a local Beaver site. Parking restrictions mean that we will need to share vehicles and expect people will take a lateral flow test before attending, to minimise risks.

The programme for the day will include the following:

- Introduction to beaver biology, ecology and impacts on the environment.
- Survey techniques and field signs
- Conflict management and mitigation techniques
- National and local beaver status and legal context / government policies for reintroduction
- Tour of a local leaver-created wetland

As we can only offer 10 places for DMG members, we will have to allocate them on a 'first come first served' basis. The aim of the day is to encourage DMG & CMG members to become involved in the surveys.

Please contact Sue Smallshire - *suesmallshire@gmail.com* if you would like to attend.

Bringing Pine Martens Back to the West Country Benefits and Challenges

Ed Parr Ferris (Devon Wildlife Trust)

January 2022 (Time and Date TBC)

Watching Seals Well!

The UK is home to more than a third of the entire world's population of grey seals and 30% of European common seals, which are facing rapid decline. Grey Seals are our equivalent of an African elephant - a globally rare, keystone species on our patch. Seals boost tourism and our coastal communities need large numbers of visitors to diversify local economies.
These popular and much enjoyed marine mammals face an extensive list of threats including toxic pollution, bycatch, entanglement, diminishing food, loss of habitat, displacement through disturbance, collisions with vessels, ingestion of plastics, on top of climate change.

Of these threats, disturbance from human interactions is a significant and growing problem.

The good news is that it's a completely preventable problem and we can all take action today to adapt our expectations and behaviour to solve this issue together!

All the Seal Alliance partners want everyone to enjoy seeing our iconic seals and know how to act responsibly to prevent us having any negative impacts on them.

Above: Jet skis disturbing seals in a quiet Cornish cove.

What is disturbance?

Disturbance is a change in an animal's behaviour caused by the presence of people affecting its health, wellbeing and survival.

When does it happen?

Put simply, disturbance is caused when people are too close, too visible or too loud.

Why does disturbance matter?

Disturbance is stressful and always a waste of vital energy, often results in injury and can be fatal. Energy is essential for survival and wild animals can quickly enter a fatal energy deficit spiral.

What does disturbance look like for the seal?

Level 1 - waking up and looking at you
Level 2 - moving in response to your presence
Level 3 - leaving the land for the safety of the sea, crash diving, leaving the area or being prevented from coming out onto the land.

Right: Seal pup dies after selfie snappers scare mother away

How does disturbance affect a seal?

Startled seals resting on land can rush into the sea and panicked seals can easily injure themselves stampeding over rocks towards the sea leaving gashed bellies or ripped out claws.

Young seals have not yet built up energy reserves, so are most affected by energy loss. Only 25% are likely to survive to the age of 18 months in a bad year (5% in a very bad year).
For pregnant adult females, stampeding over rocks can prove fatal to both mother and pup.
Mums who are disturbed in the summer have underweight pups in autumn that don't survive their first winter.
Nursing mothers can be scared away leaving dependent pups to starve.

The harm done to disturbed seals may not be immediate, visible or obvious, but minimising disturbance will greatly improve any seal's survival chances.

Do not approach wild seals on the land or in the sea, from the land, air or sea.
If your presence has changed a seal's behaviour on land or in the sea, it has been disturbed.

On land, stay on paths and keep **at least 100 metres away** wherever possible**.**
If a seal looks at you, you are too close and it has been disturbed.

In the sea, do not seek out encounters with seals. Stay over **100m away and keep moving**.
Seals can be inquisitive but don't take advantage, if a seal approaches you **keep moving.**

Avoid places with pups completely. A mother will rest close by and your presence may force her to leave her pup. If she remains, she will be stressed. Both will waste her precious energy.

The Seal Alliance has launched a government backed national '**Give Seals Space**' campaign, to help protect our seals from disturbance and its sometimes devastating consequences.

By sharing the following key 'Watching Seals Well' messaging, you can help us protect these precious creatures:

Thank you on behalf of the Seal Alliance and seals everywhere! **https://www.sealalliance.org**

Andy Ottaway and Sue Sayer

Beavers are busy in Honiton

Devon Wildlife Trust News

Beavers have been very active in recent weeks on the Gissage, the small river that runs through Honiton before flowing into the River Otter.

Beaver feeding signs were first spotted near Honiton Bottom Community Nature Reserve in late summer. Since then, Jake, DWT's River Otter Field Officer has been checking beaver field signs on the Gissage on a regular basis, and has carried out some training with East Devon District Council staff so they can recognise beaver activity and know when they might need to manage some of the mature willows and poplars that the beavers have been feeding on.


Beavers near Otterton - ***David White***

Beavers thriving in and around small towns, with local residents enjoying (or sometimes being unaware of) their presence is a regular occurrence in western European countries that re-introduced beavers before we did in Britain - so it's great to see beavers on the edge of town!

For further information visit:
https://eastdevonnews.co.uk/2021/09/03/honiton-where-can-i-see-wild-beavers-in-east-devon/

A Brief Overview of the Bat Conservation Trust's 2021 National Bat Conference

The Bat Conservation Trust (BCT) National Bat Conference took place between the 29th and 31st of October this year. It was a vibrant gathering of bat workers and ecologists from around the world. As a first-time attendee, I was struck by the wonderful sense of community, despite the event being held online. This was in no small part down to the amazing hosting skills and hard work of the Bat Conservation Trust team, led by Naomi Webster, Training and Conferences Manager.

The weekend was packed with fascinating talks and workshops led by researchers, students, and conservation workers. Several of these had a climate change related theme and can be applied to our bat populations here in Devon. A brief summary of a few of these is given below.

Forest Bats and Climate Change.

Dr Orly Razgour, University of Exeter

The workshop highlighted some of the key factors which are already impacting bat populations in the UK. Most UK bats are dependent on forests and woodlands for roosting and foraging, and their populations are placed under pressure by habitat loss and fragmentation. Bats are highly sensitive to extreme weather events which are becoming more frequent as our climate changes. The large surface area of bats wings makes them susceptible to water loss through evaporation, so increasing temperatures and humidity changes act as additional stressors. Dr Razgour highlighted a likely shift in range and diversity of our native bat populations and predicted an expansion in range of continental bats into the UK. Non-native species that we are likely to start seeing in increasing numbers include Geoffroy's Bat and Kuhl's Pipistrelle. The aim of the workshop was to collect ideas and suggestions from the attendees to inform research and data collection strategies for future forest/woodland and landscape management. Using climate-resilient management and planting it may be possible to minimise the impacts of climate change on bat habitats and native bat species. In addition, a monitoring network will be devised to keep track of the numbers of non-native bat species taking up residence here.

With Devon being a coastal county, we are ideally placed to monitor and report any non-native bats species arriving here from the Continent which may be recorded or seen during surveys. Records should be sent to the Devon Biodiversity Record Centre (DBRC) https://www.dbrc.org.uk/wildlife-sightings/ and Devon Bat Group (DBG) https://devonbatgroup.org

Another Mouth to Feed - How a recent colonist of the desert fits in at the dinner table.

Evie Morris, University of Exeter

Kuhl's Pipistrelle is a native species of the Mediterranean basin and has been closely associated with human settlements. In recent times, Kuhl's pipistrelles have been expanding their range into the natural desert areas of southern Israel. Evie's study looked into the diets of three native natural desert bat species and compared them to the diet of Kuhl's pipistrelle. Using dropping analysis it has been possible to assess the likely degree of competition for food which the arrival of Kuhl's pipistrelle presents. The Kuhl's pipistrelle was found to have increased the diversity of prey species in its diet within the extended range, giving this small bat a competitive edge. It was hypothesised that as human expansion into the natural desert increases, the diet of the existing native bat species will diversify, showing a degree of adaptive capability. This could relieve some of the competitive pressures for prey presented by the arrival of non-native bat species and changes to the landscape.

Evie's research methodology could be used in the UK to model the implications of competition for prey species between native UK bat populations, as climate change forces, or presents opportunities for, altered ranges.

The final talk, summarised on the next page, highlights some of the key findings of landscape scale projects which are being implemented to help restore biodiversity and support our native UK species.

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Landscape Scale Conservation.

James Silvey - Senior Species & Habitat Officer RSPB Scotland, and Dan Tuson - Farmland Advisor Natural England,

The key point from the Scottish landscape scale management projects presented by James Silvey, was the need for co-ordinated advice to be given to landowners. For example, here in Devon advice given to farmers on the timing of trimming hedgerows would be to wait until after the end of nesting bird season. However, to benefit a variety of species, this advice should also include waiting until the optimum time to carry out the trim for dormice and allowing the fruit and nut crop to finish. The co-ordinated advice would be to trim hedgerows during the winter (and before the start of March), rather than trimming at the beginning of September. Managing landscapes for multiple species has proven to be more effective than focusing on a single species, and long-term planning, patience, and communication are the key factors in success.

Dan has been working with farmers and landowners in Kent to restore biodiversity to farmland at landscape scale. He has been co-ordinating the re-connection of isolated islands of ecologically diverse habitats, via a network of species diverse wildflower grassland creation. This was achieved over long timescales (5 to 10 years or more) by building relationships with farmers/landowners gradually. The key to this success was to have one person overseeing the whole project and meeting the farmers/landowners to discuss possible enhancements. The project has already returned positive results with these corridors of connected, good quality grassland attracting an increased number of protected and priority species such as invertebrates, small mammals, and birds. Mammal species, such as Greater Horseshoe bats, have increased their foraging and commuting range within the landscape using the connected existing and reversion land areas. Similar results have been seen in Devon where smaller scale grassland restoration projects have been carried out by organisations such as Moor Meadows https://moormeadows.org.uk/about/.

In addition to the climate change theme, the conference included talks on bats and Covid-19, advances in surveying methods and equipment, such as faster triggering trail cameras, and more affordable infra-red and thermal cameras, and impacts of part-lighting regimes on bat species. The light-hearted Bat-ilates (Bat Pilates) sessions kept us all moving between talks and the quiz, virtual pub and raffle added a sociable element to round off each day.

Overall, the message from the conference was one of positive action, progression, and ingenuity. I was thoroughly impressed by the number of projects being run by BCT and I highly recommend taking a look at their website to see if you can get involved.

For further information about the National Bat Conference or the Bat Conservation Trust, please go to the BCT website https://www.bats.org.uk

Helen Calver

Devon Mammal Group Newsletter

HELP NEEDED PLEASE!

We are urgently looking for help with our quarterly newsletter.

Could any one take on the post of News Editor?

Newsletters appear in March, June, September and December and keep our members updated with mammal news, local, national and sometimes international. We need someone with desktop publishing skills, who would be prepared to put together the final newsletters from the articles collected for each addition.

We have a team of proof-readers and other people who regularly write and source articles for us.

If you feel you could help us please contact:

Sue Smallshire: *suesmallshire@gmail.com*

Chudleigh Wild Bat Group Award

As part of DMG's Small Grants Scheme, Chudleigh Wild's Bat Group were awarded a grant for the purchase of four heterodyne bat detectors and a bat course for their members.

For several years, a small group of bat enthusiasts in Chudleigh have been regularly monitoring the flight routes of the Greater Horseshoe Bats from their roost in Chudleigh Caves. We are all well aware of the impact on our bats of the new roads, housing and industrial units springing up within the South Hams SAC. The group felt that if they could get a better idea of which hedgerows and tree-lines the bats were using, and where they were foraging, it would help to alert the planning authority to any vulnerable areas and be flagged up in any further planning applications for Chudleigh.

When people have found us lurking in the bushes with our detectors they have been fascinated and have hung around to see what we find. This has generated more interest in bats locally and more people have asked to join the group. We now have 30 members, although, as with all activities that involve unsociable hours, the number who have come out regularly on Thursday nights is somewhat smaller.

The four bat detectors that DMG kindly funded, along with the four we had already bought ourselves, meant that we could let members of the group get thoroughly familiar with them and carry out surveys in their own time and on their own patch. We have also been helping them to recognise some of the other bats that can be easily identified from these detectors. Our grant will also cover the cost of a course, which we hope to arrange as soon as we feel it's safe for everyone to meet up indoors.

This year, Chudleigh Wild's Community Bat Evenings were held over two nights and hosted by Devon Bat Research and Conservation Group; together they brought in over 100 people, many of them children. We did some small mammal trapping, with traps kindly loaned by DMG, and caught Wood Mouse and Bank Vole. Along with two of my pet Harvest Mice, we were able to show everyone some of the small mammals that live in and around the town. We also had a mammal footprint game to pass the time while we waited for dusk. Devon Bat Group kindly lent us 10 detectors, which were shared around the visitors to add to their experience.

Because we are netting within 0.5 km of the roost, the GHBs often arrive early , so nets have to go up slightly before dusk. This means that we have the added bonus of catching a few birds to show our audience. Over the past few years, Adrian Bayley, and more recently Mark Wills, organised the netting and as both are bird ringers it's been a wonderful opportunity to show everyone birds in the hand as well as bats. This year, because of Covid, masks had to be worn when handling the animals and people have not been able to get so close. Nevertheless, we were able to show Blackbird, Song Thrush, Robin, Chiffchaff and even Whitethroat, as well as Greater Horseshoe, Common Pipistrelle and Brown Long-eared Bats.

Motus aerial

Recently, Fiona Mathews and Alan Shuttleworth have been trialling a new Motus radio-tracking project. Four receivers have been temporarily installed around Chudleigh, along with 10 sensors, and are already proving to work very successfully. The data we have collected in the last few years, together with our knowledge of possible locations, has helped Fiona to trial the equipment, ready for the start of the project in 2022. From next year, 14 radio masts will be installed within the South Hams SAC to pick up and track radio-tagged bats from various roosts.

Alan & Fiona installing sensors

The Motus Wildlife Tracking System is a network of static receivers which automatically records and logs the passage of animals carrying special tags. The system has been used for several years in North America to study how migratory birds move around.

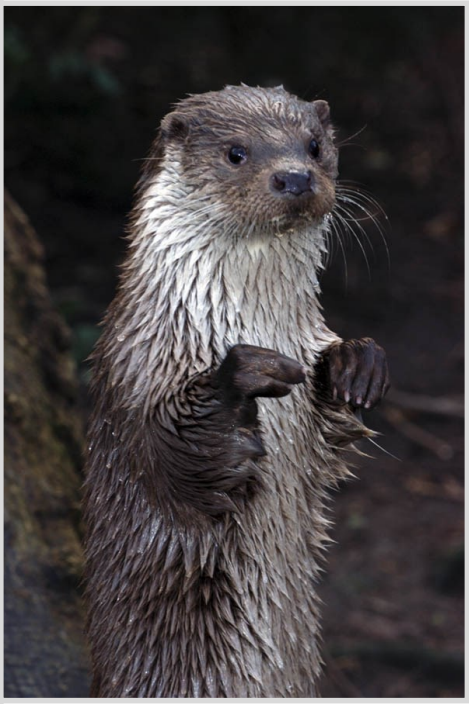
The system has recently been refined to generate very fine resolution information on the local movement of bats by deploying the receivers in a grid network. This project is a radical step-change from any approach previously used for radiotracking bats because of the very large quantities of data that can be collected. This will enable the project to assess key information gaps such as the way in which bat activity changes with increasing proximity to roads, lighting and urban areas. It will also help to identify the location of key sites, such as maternity roosts and swarming/mating sites. (Additional info from: https://www.sussex.ac.uk/study/fees-funding/phd-funding/view/1305-Life-Sciences-PhD-Biology-Studentship).

We are very grateful to DMG for supporting us and enabling us to raise awareness of bats in Chudleigh.

Sue Smallshire

SIXTH OTTER SURVEY OF ENGLAND 2021-22

The Otter is the top freshwater predator in the UK. Its status is a good indicator of the health of our waterways and the land associated with it, as it is dependent on both a sustainable food supply the availability of safe resting and breeding sites. The series of five previous national otter surveys undertaken since 1977, initiated in response to national concerns about its decline, have chartered a recovery in England from near-extinction to one of steady recovery, which was shown to be continuing in the last survey of 2009-10.



The main aim of this survey is to assess whether the trajectory of recovery has continued. There are currently concerns about potential declines recorded in the recent sixth national otter survey of Wales, as well as in some parts of Scotland. It is therefore important to assess whether the recovery in England has stalled or even reversed. If the recovery has stalled, this would require investigation of the possible causes, and it would indicate that broader pressures on the water environment are having negative effects at an ecosystem level. In addition, the survey will record signs of Beavers and Mink.

The Sixth Otter Survey of England will begin over the winter of 2021/22 and will continue for 18 months. As in previous surveys, alternate 50 x 50 km squares (encompassing just over 3,000 survey locations) will be assessed by professional ecologists. As in the previous surveys, surveying will cease when the first otter spraint or footprint is located or when the entire 600m has been assessed. This will give us a good understanding of otter distribution and allow statistical comparisons with previous surveys.

The remaining 25 50 x 50 km squares will be surveyed by experienced volunteers who are skilled in finding signs of otters. In total, 718 10km squares (or part squares) will be assessed.

The procedure will be as follows:

- In each 10km square volunteers will choose 10 spots (bridges) to check.
- Recording in the 10km square will stop as soon as a spot-check yields a positive result, and the surveyor will go on to the next square.
- If all 10 are negative, the square will be assumed negative unless there is additional reliable information available to indicate otherwise. If this is the case, then additional surveys (either a further suite of 10 spot checks; or 2-3 surveys of 600m stretches of waterway) will be conducted to provide confirmatory evidence.

If you are an experienced Otter surveyor and would be willing to help with one or more of the 10km squares, or if you know of other experienced and reliable surveyors who would be willing and capable, please get in touch with the:

Mammal Society: *info@themammalsociety.org*

Harvest Mice Around the World

'Stalky & Co'

"I can shew you some good specimens of my new mice. Linnaeus perhaps would call the species mus minimus*".* (Gilbert White, letter to Thomas Pennant March 30, 1768. *The Natural History and Antiquities of Selbourne* - 1789)

In the midst of assuming the traditional posture for looking for Harvest Mouse nests, bent over head immersed in a grass tussock, rear end presented to any incidental onlookers, a thought trickled down: while the Eurasian Harvest Mouse has a wide range, encompassing the present Devon *Molinia* pasture currently tickling my nose, across to northern Spain, Siberia and eastern China, are there any other species of harvest mice in the world?

The answer is essentially 'no', so this could be a very short article. But the fact that there is the one species only, in its own singular taxonomic group and with no close relatives, is interesting in itself – and not quite the whole story.

Gilbert White's correspondence notwithstanding, scientific classification originates, and remains in place, from Simon Pallas 1771, made during a 6 year expedition of the Volga region of Siberia 1768-74 for Czarina Catherine II; this gives us *Micromys minutus* Pallas 1771 (trans: 'small mouse tiny'), the distinct genus *Micromys* and type specimen ascribed to Johann Friedrich Anton Dehne from 1841. There is no apparent emergence or radiation of other *Micromys*; the one and same extant 'small mouse tiny' is the sole occupant of an enormous (enormouse?) global region.

If this monopolising seems unusual, the operative word is 'extant'. From the deeper past is fossil evidence for some 10 additional *Micromys* species, dating back to the Late Miocene (*c*. 11.6 – 5.3 Ma [million years ago]), all of which are now extinct. We no longer see *M. bendai, M. caesaris, M. chalceus, M cingulatus, M. coronensis, M. kozaniensis, M. liui, M. paricioi, M. praeminutus* or *M. steffansi. Micomys praeminutus*, a possible precursor, appears in East Asia 2 million years ago, in the Pliocene (5.4 – 2.4 Ma).

Serial ice ages may be the reason for extirpation and then subsequent predominance of the current single wide-ranging species. The provenance of the remaining little *Micromys* is a little mysterious. Recent fossils of *M. minutus* have been found only in China to date: this appears to be Harvest Mouse ground zero, from where the surviving species spread across Eurasia. (There is a twist in this furry tale, however, explained at the end).

Meanwhile, an ocean away in the New World, the early Pliocene fortunes of diminutive, long-tailed, scansorial (climbing) mice, which build spherical nests sometimes elevated in the stalk zone, took a different turn. Today there are some 22 different species of 'harvest mice' across the US and Central and South America. This common name, however, and the ostensibly similar size, appearance and habits to their Eurasian counterpart, are ecologically circumstantial only, an example of convergent evolution. The harvest mice of the Americas have an entirely separate evolutionary lineage, more closely related to European bank voles (Subfamily Arvicoloniae, subclade Clethrionomyini: genus Myodes) than European harvest mice, who have greater affinities to two Asian genera of long-tailed climbing mice (Vandeleuria) and pencil-tailed field mice (Chiropodomys).

To follow the taxonomic sat-nav directions, the Superfamily Muroidea, mouse-like rodents, is large and complex. From here take the Family Cricetidae (hamsters, voles, lemmings, muskrats) to the Subfamily Neotominae (New World / North American rats and mice). This is divided into 4 Tribes: Baiomyini (pygmy mice, brown mice); Neotomini (pack rats, wood rats); Ochrotomyini (golden mouse); and the Reithrodontomyini ('channel' or 'groove-toothed' mice), which comprises deer mice (Peromyscus), grasshopper mice (Onychomys), and all of the New World harvest mice (Genus Reithrodontomys), where we reach our classification destination.

The roll call, with brief notes, grouped roughly geographically, is as follows:

1. **Guerrero** or **Baker's small-toothed** harvest mouse *Reithrodontomys bakeri*. Discovered in Guerrero, central Mexico in 2004.
2. **Sonoran** harvest mouse *R. burti*. Mexico only.
3. **Volcano** harvest mouse *R. chrysopsis*. Mexico only.
4. **Hairy** harvest mouse *R. hirsutus*. Mexico only.

5. **Cozumel** harvest mouse *R. spectabilis*. Island of Cozumel, off Yucatan peninsula, Mexico, only. Nocturnal and semi-arboreal, in dense secondary forest and forest edges. Small, fluctuating patchy population, threatened by predation by feral cats, dogs and introduced boa constrictors, competition with non-native rats and mice, periodic hurricanes and floods. ***Critically endangered***.
6. **Zacatecas** harvest mouse *R. zacatecae*. Mexico only
7. **Darien** harvest mouse *R. darienensis*. Panama only.
8. ***R. musseri*** new species described from Cerro Asunción, western Cordillera de Talamanca, Costa Rica in 2009. Most closely resembles Small-toothed harvest mouse *R. microdon*.
9. **Rodriguez's** harvest mouse *R. rodriguezi*. Costa Rica only.
10. **Eastern** harvest mouse *R. humulis*. South eastern US only but widely distributed between Ohio, Oklahoma, Texas, Delaware, and Florida; extinct in Maryland. Subtropical or tropical seasonally wet or flooded lowland, grassland, abandoned fields, marshes and swamps. Dark dorsal line, bi-coloured tail with pale underside. Mostly nocturnal. Typical lifespan of 9.5 weeks


Salt Marsh Harvest Mouse

11. **Salt marsh** or **Red-bellied** harvest mouse *R. raviventris*. San Francisco Bay area, California, US, only: limited to Napa Sonoma Marsh, Suisun Marsh, Alman Marsh, Arrowhead Marsh, Sausalito baylands, San Rafael baylands, Palo Alto baylands, Alviso sloughs, Bair Island, Point Reyes National Seashore. Salt marsh, other marshy habitats, tidal wetlands. 2 distinct subspecies, northern *R. r. halicoetes* (brown – reddish dorsal fur and white or cream, rarely reddish, ventral fur) and southern *R. r. raviventris* (generally darker brown dorsal fur and pinkish or tawny ventral fur, with similarly bi-coloured tail). Both resemble, but are unrelated to, Western harvest mouse *R. megalotis* (which has overlapping range and grey belly fur). Nocturnal, particularly active on moonlit nights; agile climber, uses other rodent runways, swims well, and is tolerant to salty water and plants in diet. Especially favours, and depends upon, Pickleweed (a glasswort) *Salicornia virginica* for habitat and food, and *Schoenoplectus* (tall club-rushes). Movements and occupation of home ranges vary seasonally, adaptive to displacement by temporary inundation of habitat. Historic decline, and ongoing threats, from habitat loss to development, pollution, boat activity, salt harvesting, predation by domestic cats, and sea level rise. Several wildlife refuges established and 50m development buffers from shoreline. Political arguments over spending on *R.aviventris* habitat. ***Endangered***.


Micromis erythrotis **from Northern Vietnam**

12. **Short-nosed** harvest mouse *R. brevirostris*, Nicaragua and Costa Rica.
13. **Chiriqui** harvest mouse *R. creper*. Costa Rica and Panama.
14. **Fulvous** harvest mouse *R. fulvescens*. Widespread: south-western United States (Arizona, Texas, Oklahoma. Kansas, Missouri, Arkansas, Mississippi), Mexico, Guatemala, El Salvador, Honduras, Nicaragua. Around 17 recognised subspecies, varying in pelage colour and size. Often with a dark dorsal stripe; similar to Hairy harvest mouse *R. hirsutus*. Nocturnal, with some seasonal and geographical differences in diet (seeds and invertebrates) and number of litters/year. Male and female may pair bond.
15. **Slender** harvest mouse *R. gracilis*. Mexico, Guatemala, El Salvador, Belize, Honduras, Nicaragua and Costa Rica. Small, with an elongated skull. Semi-arid and arid areas to evergreen and deciduous forests, cliffs. Never common; numbers unclear. 5 subspecies recognised. Closest relation is the rare and restricted Cozumel harvest mouse *R. spectabilis* (hence *c.*40-60 young per annum is typical).
16. **Western** harvest mouse *R. megalotis*. Across western US and Canada: British Columbia, southeast Alberta, west Texas, NE Arkansas, NW Indiana, SW Wisconsin, central Mexico. Comparatively large: 11-17cm length, with shorter 5-10cm tail. Paler wider dorsal stripe than Plains harvest mouse *R. montanus*, and shorter tail than Fulvous harvest mouse *R. fulvescens*. Nocturnal, especially active on very dark nights. Enters torpor in cold conditions, but unclear if true hibernation occurs. Granivorous and herbivorous diet (on vetches, oats, brome, fescues) plus fruits and summer insects; makes winter food caches along runways and underground. Agile climber. Nests made usually at ground level amongst dense cover, but can be elevated. May have 10-14 litters of 2-6, occ. up to 9, per year (hence *c.*40-60 young per annum is typical).


Western Harvest Mouse

17. **Mexican** harvest mouse *R. mexicanus*. Mexico, Guatemala, El Salvador, Honduras, Nicaragua, Costa Rica, Panama, Ecuador and Colombia, in a variety of habitats, to 3800m altitude.
18. **Small-toothed** harvest mouse *R. micridon*. Mexico and Guatemala.
19. **Plains** harvest mouse *R. montanus*. Central US and northern Mexico. Grassy fields and grazed prairie, eating mainly seeds and invertebrates. Grey dorsal fur with dark stripe. Hair longer in winter. Summer breeding only in colder regions of central US, but all year round in Central America.
20. **Nicaraguan** harvest mouse *R. paradoxus*. Nicaragua and Costa Rica.
21. **Sumichrast's** harvest mouse *R. sumichrasti*. Mexico, Guatemala, El Salvador, Honduras, Nicaragua, Costa Rica and Panama.
22. **Narrow-nosed** harvest mouse *R. tenuirostris*. Mexico and Guatemala only. ***Endangered***.

The contributions of two eminent US harvest mouse-ologists are significant. Clinton Hart Merriam (1855-1942), ornithologist, appointed naturalist for surveys which led to the founding of Yellowstone National Park, and 'father of US mammalogy', described 5 of the species in the current list: Volcano, Hairy, Small-toothed, Narrow-nosed and Zacatecas harvest mice, each of whose scientific names are accredited to 'Merriam 1901'. Emmet Thurman Hooper (1911-1992) was a pioneer of examining geographic and evolutionary associations to classify species, and how these relate to speciation patterns and barriers, before cladistics and phylogenetic methods were formally established. His 1952 review of Latin American Reithrodontomys remains authoritative and underlies taxonomic understanding of the group.

Before resuming focus on our Eurasian Harvest Mouse, two observations can be made. The first is the number of endemic species: Mexico is home to 6 species found nowhere else, one on a single island off Yucatan (the Cozumel harvest mouse); Costa Rica and the US have 2 endemics each; and Panama its own Darien harvest mouse. For any harvest mouse aficionados or panlisters, you will just have to force yourself to visit Central America, particularly Mexico (13 species), Costa Rica (8 species), and generally travel around Guatemala, Honduras and Nicaragua, for los ratones pequeños. The Cozumel harvest mouse, and the Salt marsh / Red-bellied harvest mouse, restricted to the San Francisco Bay area, are, along with the Narrow-nosed harvest mouse, endangered; the rest are IUCN-rated 'of least concern'.

A final note is that new species continue to be discovered, for example Baker's small-toothed harvest mouse in Mexico in 2004, and *R. musseri* from Costa Rica in 2009. Similarities between subspecies and overlapping ranges may result in further species, through taxonomic splitting and re-ordering. Which returns us to *Micromys*.

There was something unusual noticed about the harvest mice in northern Vietnam. A 2009 analysis of skulls and teeth, and differences in certain other morphological features, supported by DNA sequencing, revealed a strong divergence and different origin for harvest mice populations in Sichuan, southern China and Vietnam (also in one Indian specimen). The existence of a distinct species, *Micromys erythrotis*, was confirmed. This 'southern' *M. erythrotis* species, known so far from southern China / Vietnam, has a proportionally larger skull, with a longer and broader upper jaw, and longer tail (approx.1.2 x body length, compared to 0.8 – 0.95 x body length in *M. minutus i.e.* tail about 20% longer). *M. erythrotis*'s dorsal fur is grey with, at most, brown tinges, so that there is not such a pronounced contrast with the whiter underside, as opposed to the overall red-brown pelage in most *M. minutus*.

Back in Devon I didn't find any nests that day, but peak harvest mouse survey season runs for the next few months until the end of March 2022. Please send your records to https://www.surveymonkey.co.uk/r/TFH9D55

Stephen Carroll

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WANTED!

HARVEST MOUSE NEST RECORDS!

This is the nest of a Harvest Mouse: no other animal makes a nest quite like it. We're trying to find out where Devon's Harvest Mice live by looking for small, tennis-ball sized woven nests like the one in the photo, often in large clumps of grass, reeds or along hedgerows.

If you have seen a nest like this we'd love to know: it's quick and easy to tell us - just use the QR code, or go to the address below. Thank you!

https://www.surveymonkey.co.uk/r/TFH9D55